AKSHDEEP SINGH RANDHAWA

Senior Robotics Engineer | Perth, WA

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PROFILE

Experienced Robotics Engineer with 5 years of success designing, building, and scaling distributed robotic systems and backend infrastructure. Skilled in system architecture, data processing pipelines, and sensor integrations. Adept at leading complex projects end-to-end, mentoring junior engineers and interns, and driving innovation through robust, real-world solutions with measurable impact. Strong background in Python, C++ and ROS, with a proven ability to quickly adapt to new languages and technologies. Passionate about high-quality code, meaningful collaboration, and continuous learning.

PROFESSIONAL EXPERIENCE

Chironix Pty Ltd — Perth, Australia

Senior Robotics Engineer

May 2023 – Present

- Architected and deployed autonomous inspection robots at Guddai Darri and a major mining site in Chile, upgrading conveyor belt inspections from bi-weekly to daily, boosting monitoring frequency by 400% to increase anomaly detection and response speed.
- Built and optimized C++ and Python-based APIs and control services interfacing with ROS (Robot Operating System) processing thousands of data points daily for real-time navigation and telemetry.
- Served as technical lead for multi-platform robotic systems, coordinating a team of 8 engineers and 4 interns, overseeing project scoping, delivery timelines, and successful handover of mission-critical solutions.

Robotics Engineer

Dec 2020 – May 2023

- Developed backend services for autonomous robot navigation, integrating localization, mapping, and perception data pipelines.
- Integrated and configured ARM64 SoCs (Jetson Nano, Orin) with custom device trees and bootloaders for ROS-based deployments.
- Developed shell scripts and used make files for cross-compilation and deployment.
- Engineered automated CI/CD pipelines (GitHub Actions, CircleCI, Docker) aligned to increase deployment frequency, shorten lead time for changes, and improve recovery from system incidents.
- Designed and tested real-time data processing workflows for 3D LiDAR, thermal imagery, and GPS systems.
- Supported system stability through proactive monitoring, incident response, and robust logging and telemetry solutions.

Robotics System Administrator

Jul 2020 – Dec 2020

- Managed Linux-based infrastructure and containerized application deployments for robotic field platforms.

- Established private networking and system monitoring solutions across multi-site testbeds, improving reliability and uptime.
- Streamlined development workflows through DevOps practices and infrastructure automation.

TECHNICAL SKILLS

Programming Languages: Python | C++ | Bash | Rust (Beginner)
Frameworks: ROS | ROS2 | Nvidia ISAAC | Zenoh | MQTT | PlatformIO | OpenWRT
Infrastructure: Docker | GitHub Actions (CI/CD) | Linux | CircleCI | AWS | GCP
Tools: Gazebo | Rviz | FFmpeg | Zenoh | MQTT | Wireshark | Cron
Embedded Systems & Hardware Integration: ESP32 | FTDI | UART | I2C | SPI | x86 | ARM64
Networking and Communication: ZeroTier | SOCKS Proxy | Tailscale | Quectel SOCs | CANopen
Project Management: Jira | Confluence | GanttPRO | Agile Methodologies | Scrum Master | Github
Linux Kernel: Device tree config | Bootloader (U-Boot) | Cross-compiling | Kernel module debugging
Build Systems: Makefiles | Shell scripting for toolchains | Embedded Linux bring-up

EDUCATION

EDITH COWAN UNIVERSITY – Perth, Australia
Master of Engineering (Mechatronics), 2019
CGPA 3.625, WAM 75%

PUNJABI UNIVERSITY – Punjab, India
Bachelor of Technology (Mechanical Engineering), 2017
Awarded with First Division

PROJECTS & HIGHLIGHTS

PROFESSIONAL

- **PilotOS Development:** A mission-critical orchestration platform enabling real-time mission planning with teach-and-repeat methodology, and ROS-based perception pipelines, delivering daily autonomous inspections at large-scale mine sites.
- **Chiropak Platform:** Modular sensing kit integrating LiDAR, RTK GPS, thermal cameras, acoustic sensors for robotic inspections, built on Nvidia Tegra SOCs and developed with ISO 10218 safety principles and EMC-tested hardware in mind.
- **Wireless Charging R&D: I**ntegrated 3kW wireless charging systems for autonomous robots, enabling automatic docking, recharging, and continuous mission scheduling without human intervention.
- **Internship Program Leadership:** Designed and supervised internship projects aligned with government grant initiatives, delivering practical R&D in perception fusion, multi-domain sensor calibration, and autonomous robotics.
- **Kernel Config & Bring-up:** Customized boot parameters, device tree overlays, and driver bindings for sensor suites on Nvidia Jetson platforms.
- **Network Stack:** Designed secure remote-control architecture using ZeroTier mesh for “no config” connections and peer-to-peer routing for ROS telemetry.

REFERENCES

Available on request